

-30-

**SYSTEM, APPARATUS, AND METHOD FOR MEASURING AN OXYGEN
CONCENTRATION OF A GAS**

ABSTRACT OF THE INVENTION

5

An apparatus, system and method maximizes efficiency and accuracy of measuring an oxygen concentration of a measured gas by varying a flow of oxygen ions within a measuring cell (202) in accordance with an output signal of an oxygen sensor cell (206). The pump current (208) through a pump cell (204) is switched between a constant positive current and a constant negative current when upper and lower thresholds of the output signal are reached. The pulse width ratio of the square wave produced by the varying current is compared to a pulse width ratio function derived from a calibration procedure to determine the oxygen concentration of the measured gas.

15